WHAT IS CLAIMED IS:

1. A multi-dimensional measuring system comprising:

a tracking unit that emits laser light and performs tracking using spherical coordinates;

a target in communication with the tracking unit, the target being capable of making pitch, yaw, and roll movements;

a distance determining module that determines a distance between the tracking unit and the target; and

an output module that outputs position information about the target relative to the tracking unit based on the spherical coordinates, the pitch, yaw and roll movements, and the distance.

2. The system of claim 1, further comprising an output device that outputs the position information about the target.

3. The system of claim 1, wherein the roll movement is based on at least one of a comparison between a horizontally polarized component of the laser light and a vertically polarized component of the laser light.

4. The system of claim 3, further comprising a first photodetector that detects the horizontally polarized component of the laser light and a second photodetector that detects the vertically polarized component of the laser light.

5. The system of claim 4, further comprising a roll determination circuit that receives an output of the first photodetector and an output of the second photodetector.

6. The system of claim 1, further comprising an electronic level configured to measure roll movements associated with the target.

7. The system of claim 1, wherein the target is an active target that is capable of moving relative to the tracking unit.

8. The system of claim 7, wherein the target is at least one of incorporated into a remote unit, fixably attached to an object, used for feedback control, used for calibration, used for machine tool control, used for parts assembly, used for structural assembly, and used for dimensional inspection.

9. The system of claim 8, wherein the remote unit is a robot.

10. The system of claim 9, wherein the robot comprises a drive system and one or more traction devices that allow the robot to adhere to a surface.

11. The system of claim 10, wherein the traction devices are suction cup type devices.

12. The system of claim 9, wherein the robot comprises a positive air pressure system.

13. The system of claim 8, further comprising a vacuum system.

14. The system of claim 8, further comprising one or more accessories that allow a function to be performed based at least on the position information of the target.

15. A remote unit associated with a multi-dimensional measuring system comprising:

a target in communication with a tracking unit of the multi-dimensional measuring system, the target being capable of making pitch, yaw, and roll movements; and

a probe assembly coupled to the target, the probe assembly comprises a probe tip, a probe stem, and a probe base, wherein the probe tip is configured to reach locations not within a line of sight between the tracking unit and the target.

16. The remote unit of claim 15, further comprising one or more encoders coupled to the probe assembly.

17. The remote unit of claim 16, wherein at least one of the encoders is configured to determine a first angular position of the probe tip relative to the probe base.

18. The remote unit of claim 17, wherein at least one of the encoders is configured to determine a second angular position of the probe tip relative to the probe base.

19. The remote unit of claim 16, wherein at least one of the encoders is configured to determine an axial position of the probe tip relative to the probe base.

20. The remote unit of claim 16, further comprising a trigger configured to effect one or more measurements associated with a location touched by the probe tip.

21. The remote unit of claim 16, further comprising a touch sensor associated with the probe tip, wherein one or more measurements associated with a location is taken when the touch sensor comes into contact with the location.

22. A target associated with a multi-dimensional measuring system comprising:

a retro-reflector having an apex, wherein the apex is configured to allow at least part of a laser beam light entering the retro-reflector to exit the retro-reflector; and

a laser light sensor configured to detect the at least part of the laser beam light exiting the retro-reflector through the apex.

23. The target of claim 22, wherein the target is configured to be coupled to an optical measuring sensor.

24. The target of claim 22, wherein the retro-reflector is a hollow retro-reflector.

25. The target of claim 24, wherein the retro-reflector comprises an aperture at the apex, the aperture is configured to allow the at least part of the laser beam light to exit the retro-reflector.

26. The target of claim 24, wherein the retro-reflector comprises three mirrors that form the apex.

27. The target of claim 22, wherein the retro-reflector is a solid retro-reflector.

28. The target of claim 27, wherein the apex comprises a small flat surface polished to allow the at least part of the laser beam light to exit the retro-reflector.

29. The target of claim 22, wherein the laser light sensor is a photodetector.

30. The target of claim 22, wherein the laser light sensor is a charge coupled device array sensor.

31. The target of claim 22, wherein the laser light sensor is operable to detect at least one of the pitch and yaw movements of the target.

32. A method for measuring a position of an object comprising:

monitoring spherical coordinates of a laser light emitting tracking unit;

monitoring pitch, yaw, and roll movements of a target in communication with the tracking unit;

determining a distance between the tracking unit and the target; and

outputting position information about the target relative to the tracking unit based on the spherical coordinates, the pitch, yaw, and roll movements, and the distance.

33. The method of claim 32, wherein the roll movement is based on at least one of a comparison between a horizontally polarized component of a laser light emitted by the tracking unit and a vertically polarized component of the laser light.

34. The method of claim 33, wherein a roll determination circuit performs the comparison between the horizontally polarized component of the laser light and the vertically polarized component of the laser light.

35. The method of claim 32, wherein the target is an active target that is capable of moving relative to the tracking unit.

36. The method of claim 32, wherein target is at least one of incorporated into a remote unit, fixably attached to an object, used for feedback control, used for calibration, used for machine tool control, used for parts assembly, used for structural assembly, and used for dimensional inspection.

37. The method of claim 36, wherein the remote unit comprises a drive system and one or more traction devices that allow the remote unit to adhere to a surface.

38. The method of claim 37, wherein the traction devices are suction cup type devices used in conjunction with a vacuum system.

39. The method of claim 36, wherein the remote unit is remotely controlled.

40. The method of claim 36, further comprising allowing a function to be performed by an accessory based at least on the position information of the target.

41. The method of claim 36, wherein the robot comprises a positive air pressure system.

42. A system for measuring the position of an object comprising:

means for monitoring spherical coordinates of a laser light emitting tracking unit;

means for monitoring pitch, yaw, and roll movements of a target in communication with the tracking unit;

means for determining a distance between the tracking unit and the target; and

means for outputting position information about the target relative to the tracking unit based on the spherical coordinates, the pitch, yaw, and roll movements, and the distance.

43. The system of claim 42, wherein the roll movement is based on at least one of a comparison between a horizontally polarized component of a laser light emitted by the tracking unit and a vertically polarized component of the laser light.

44. The system of claim 43, wherein a roll determination circuit performs the comparison between the horizontally polarized component the laser light and the vertically polarized component of the laser light.